AF/2958

BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

IN RE APPLICATION OF:	Charles D. SNELLING & Leo T. VAN LAHR
SERIAL NO.:	09/819,943
FOR:	APPARATUS FOR DETECTING THE INTERNAL LIQUID LEVEL IN A VESSEL
FILED:	March 28, 2001
GROUP ART UNIT:	2855
EXAMINER:	Michael T. CYGAN
Confirmation No.:	2958

Mail Stop Reply Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

REPLY TO EXAMINER'S ANSWER

Dear Sir:

This brief is submitted in response to the Examiner's Answer of October 7, 2003, and pursuant to 37 C.F.R. § 1.193 in furtherance of the Appeal Brief filed for this case on May 5, 2003.

CERTIFICATE OF MAILING (37 C.F.R. § 1.8(A))

I hereby certify that this document and the documents referred to as enclose therein are being deposited with the United States Postal Service as First Class mail addressed to: Attention: Mail Stop Reply Brief - Patents, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on this 1st day of December, 2003.

Donald H. Zarley

REMARKS:

In the Examiner's Answer, the Examiner has made fairly detailed assertions as to what Petersen does and does not disclose. Appellant cannot agree with many of the Examiner's portrayals of the disclosure of Petersen.

Regarding the Examiner's argument that Petersen does disclose a "thermally conductive substrate" the Examiner first argues that when Petersen at column 4, lines 29-38 states that the rod 30 is composed of "insulating material" that this is a reference to electrical and not thermal insulation. Appellant cannot find any support in this portion of Petersen to support an interpretation that the reference to rod 30 as being composed of "insulating material" does not refer to its thermal conductivity. Specifically, the entire paragraph discusses the heat transfer across the rod 30 as well as in the longitudinal direction of rod 30. Accordingly, Petersen discloses that rod 30 is composed of thermally "insulating material" and does not anticipate Appellant's limitation of "a thermally conductive substrate" found in Appellant's independent claims 1, 11, 13 and 16.

Next, the Examiner argues the statement Petersen at column 4, line 34, that "the heating effect across the rod is very good" discloses that the rod 30 is not thermally insulating and is on the contrary, a very good thermal conductor. Appellant

cannot agree. A reading of the entire paragraph at column 4, lines 29-38, shows that rod 30 is composed of "insulating material" that "the heating effect across the rod is very good **because of the small thickness** of material between two grooves 31 and 32; on the other hand, the heat-transfer in the longitudinal direction is correspondingly poor on account of the small cross-sectional area." In this paragraph, Petersen is not disclosing that rod 30 is a "thermally conductive substrate"; rather, Petersen is describing rod 30 as an insulating material which has differing heat-transfer properties depending on the cross-sectional area of the material, and the thickness of the rod 30 that the heat must transfer through. This disclosure of Petersen merely restates general principles of heat transfer regardless of whether the material is thermally conductive or thermally insulating, and does not indicate that rod 30 is made of a "thermally conductive substrate". Accordingly, the language in Petersen disclosing the rod 30 as composed of "insulating material" is determinative when discussing the anticipation of the term "thermally conductive substrate" in Appellant's independent claims 1, 11, 13 and 16.

Further, the Examiner notes that even "poor" thermally conductivity of a substrate would anticipate the claim since the claim merely requires a "thermally conductive substrate". Appellant cannot agree with this interpretation of the claim

limitation "thermally conductive substrate". Specifically, as there is no known material that is a perfect insulator, all materials conduct heat to a certain extent. Appellant argues that "thermally conductive" is a term of art that is used to divide those substances that are "good conductors" from those substances that are "poor conductors". If the Examiner's construction of the claim where used, it would render the term "thermally conductive" irrelevant as all substrates have some thermally conductivity. As rod 30 of Petersen is described as being composed of "insulating material", Appellant cannot agree that such material anticipates "thermally conductive substrate" as would be understood to one of ordinary skill in the art.

Regarding the Examiner's argument that Petersen discloses the limitation of Appellant's claim 11 of "upper, intermediate, and lower sensors" wherein the intermediate sensor has a "vertical dimension sufficiently large that said temperatures signal will vary in proportion to said longitudinal portion of said intermediate sensor thermally coupled to the liquid", the Examiner argues that sensors 26-29 of Fig. 4 consist of the same longitudinally temperature responsive material as that of item 8 or 34 of Figs. 2 and 5. In making this argument, the Examiner focuses on the language that the sensors of Figs. 3 (or Fig. 4) "likewise consist of a temperature-dependent material" like resistor element 8 of Fig. 2. The Examiner, however, glosses

over the language distinguishing the first embodiment of Fig. 2 from the second and third embodiments of Figs. 3 and 4, respectively, where Petersen states that "whilst the connection shown in Fig. 2 enables any required liquid level to be measured, in many cases it suffices to determine a certain number of **definite levels**. In the embodiment shown in Fig. 3, therefore, the resistor element 8 is replaced by four **discrete** series-connected separate resistors 18-21, which are fitted at vertical positions along element 5 that correspond to the liquid levels in question." (Petersen at column 4, lines 5-12). Accordingly, Petersen discloses three separate embodiments, where the first embodiment shown in Fig. 2 enables "**any** required liquid level to be measured", while the second and third embodiments shown in Figs. 3 and 4 have a series of temperature dependent **discrete** separate resistors that determine a certain number of "**definite levels**". The fact that the sensors of Figs. 3 and 4 are made of temperature-dependent material is not determinative, as even the "discrete separate resistors" for determining "definite levels" of Figs. 3 and 4 must necessarily be temperature-dependent to function. However, this does not mean that the sensors of Figs. 3 and 4 operate in the same manner as the single continuous resistor element 8 of Fig. 2. Accordingly, the disclosure of Petersen that Figs. 3 and 4 comprise discrete series-connected separate resistors for

defining definite levels not only does not anticipate an intermediate sensor having "a vertical dimension sufficiently large that said temperature signal will vary . . ." as required by Appellant's claim 11, it also teaches away from such an interpretation since the continuous resistor element 8 of Fig. 2 is replaced with the discrete series-connected separate resistors of Figs. 3 and 4.

Next, the Examiner argues that Figs. 3 and 4 both show intermediate sensors "having considerable vertical spans." However, earlier in the Examiner's Answer, he referred to Figs. 1, 2 and 5 of Petersen as showing "different degrees of detail (an overview, schematic, and material construction) of the invention of Petersen." Appellant agrees with this assessment of Figs. 1, 2 and 5, specifically that Fig. 2 is a schematic view. Likewise, Figs. 3 and 4 are also schematic views similar to that of Fig. 2. As Figs. 3 and 4 are schematic views showing generic boxes for sensors 18-21 and 26-29, one of ordinary skill in the art would not interpret these "generic boxes" to be an accurate representation of the actual size of these sensors 18-21 and 26-29. Accordingly, Figs. 3 and 4 must be read in light of the specification which describes them as "discrete" separate resistors for determining a "certain number of definite levels". In view of this written description in Petersen, there can be no argument that resistors 18-21 and 26-29 operate in the same

manner as resistor 8 of Fig. 2. Therefore, sensors 18-21 and 26-29 would not therefore act in the same way as sensor 8 to produce a temperature signal which will vary in proportion to said longitudinal portion of said intermediate sensor thermally coupled to the liquid. Accordingly, Figs. 3 and 4 do not anticipate Appellant's claim 11.

Further, the Examiner argues that the use of switches in Fig. 4 are used in Petersen "to transform the output of the sensors 26-29 (which vary in response to the amount of longitudinal portion coupled to liquid) to discrete single response signals." The Examiner goes on to state that "if the sensors 26-29 had not sufficiently large vertical component, the use of switches would be redundant and unnecessary." The Appellant cannot agree with this interpretation of Petersen. Specifically, Appellant refers to Petersen at column 4, lines 17-24, which describes that in Fig. 4 when "one of the bimetal switches is actuated, the associated resistor is short-circuited. Consequently, the total resistance of the series connection changes correspondingly." Appellant understands this description of Fig. 4 to mean that as the water level rises with respect to the embodiment in Fig. 4, the total resistance of the device in Fig. 4 will decrease as each individual resistor is short-circuited when the corresponding switches are actuated by the rising water. Conversely, the device in Fig. 3 would have

rising resistance as the water rises since it does not have switches 22-25 to short-circuit when the water rises. Accordingly, the presence of switches 22-25 are not an indicator that sensors 26-29 have a large vertical component for varying in proportion to said longitudinal portion of said intermediate sensor. Additionally, Appellant asserts that the presence of switches 22-25 is a clear indication that the Examiner's interpretation of sensors 26-29 being of sufficiently large vertical component to vary in proportion to the corresponding liquid is incorrect. Specifically, were the sensors 26-29 to function as the Examiner suggests, as the water level first contacted the device of Fig. 4, the resistance would rise continually as the water rose over sensor 29, however, once sensor 29 was sufficiently triggered, switch 25 would actuate and the resistance would suddenly drop below the resistance initially present when the water first contacted element 29. Likewise, as the water continued to rise to contact element 28, the resistance would proceed to rise again as the water contacted item 28, however, when sufficiently triggered short-circuit switch 24 would cause the resistance to instantaneously drop yet again. Accordingly, the Examiner's interpretation of sensors 26-29 result in an inoperative device as shown in Fig. 4. Accordingly, Petersen does not anticipate Appellant's claim 11.

Regarding the Examiner's argument that resistors 26 and 29 of Petersen generate respective electrical signals each defining a temperature signal, the Examiner asserts that the resistors "clearly generate respective electrical signals each defining the temperature of the resistors" in that the signals are "summed by a measurement circuit (column 4, lines 13-14 of Petersen). The Appellant cannot agree with the Examiner's interpretation of claim 11. Specifically, claim 11 recites that the upper and lower sensors "generate respective electrical signals each defining a temperature signal" and a "processor electrically connected to each of said sensors for receiving said temperature signals" and that the processor "used said temperature signals to calculate the elevation". Accordingly, Appellant's claim 11 clearly recites a parallel relation between the connection from upper sensor to the processor and the lower sensor connected to the processor where the processor is "electrically connected to **each** of said sensors for receiving **said temperature signals**". Conversely, Petersen shows resistors 26-29 as operating in series to generate a single temperature signal (Petersen column 4, lines 8-17). Thus, there is not a plurality of "temperature signals" generated, nor is there a processor "electrically connected to each of said sensors for receiving said temperature signals" as recited in claim 11.

Accordingly, independent claim 11 is not anticipated by Petersen.

In view of the above arguments, Appellant believes that appealed claims 1-3 and 9-17 are in condition for allowance and Appellant respectfully requests reversal of the Final Office Action and allowance of such claims.

Any fees or extensions of time believed to be due in connection with this appeal are enclosed; however, consider this a request for any fee or extension inadvertently omitted, and charge any additional fees to Deposit Account 50-2098.

Respectfully submitted,

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